

## CLAIMS

1. A method for processing PFC that is used in a process for manufacturing semiconductor devices or the like, the method is characterized in that the PFC that is used under a reduced pressure is brought under the atmospheric pressure through a vacuum pump, then a reactive material is added to the PFC, and a plasma process is conducted for a mixed gas composed of the PFC and the reactive material to thereby generate a polymer with the PFC and the reactive material.

2. A method for processing PFC according to claim 1, wherein the reactive material is gas of paraffin hydrocarbon or alcohol.

3. A method for processing PFC that is used in a process for manufacturing semiconductor devices or the like, the method is characterized in that the PFC that is used under a reduced pressure is brought under the atmospheric pressure through a vacuum pump, then water and/or oxygen are added to the PFC gas, and a plasma process is conducted to decompose the PFC.

4. An apparatus for processing PFC to be disposed in a succeeding stage of a vacuum pump that is connected to a vacuum chamber that is used in a process for manufacturing semiconductor devices or the like, the processing apparatus comprises:

a plasma process section that irradiates plasma to the PFC that is discharged under the atmospheric pressure through a vacuum pump, and a reactive material supply section that is disposed in a preceding stage of the plasma process section and adds a reactive material to the PFC to produce a mixed gas, wherein the mixed gas is subject to a plasma process under the atmospheric pressure to generate a polymer with the PFC and the reactive material.

5. An apparatus for processing PFC according to claim 4, wherein the reactive material is gas of paraffin hydrocarbon or alcohol.

6. An apparatus for processing PFC to be disposed in a succeeding stage of a vacuum pump that is connected to a vacuum chamber that is used in a process for manufacturing semiconductor devices or the like, the processing apparatus comprising:

a plasma process section that irradiates plasma to the PFC that is discharged under the atmospheric pressure through a vacuum pump; and

a reactive material supply section that is disposed in a preceding stage of the plasma process section and adds water and/or oxygen to the PFC, wherein the PFC that includes the water and/or oxygen is subject to a plasma process under the atmospheric pressure to decompose the PFC.

7. An apparatus for processing PFC according to claim 4, further comprising a cyclone collector provided in a succeeding stage of the plasma process section, wherein the polymer is collected by the cyclone collector.

8. An apparatus for processing PFC according to claim 7, further comprising a pair of open/close type partition boards provided at a bottom section of the cyclone collector where the polymer deposits to provide a double chamber structure at the bottom section, wherein deposition and recovery of the polymer can be simultaneously conducted by open/close operation of the partition boards.